The Ark: Grafting Productive Programs onto Contemporary Wastespace

As the intertwined issues of climate change and resource scarcity profoundly alter the shape and scope of urban life, emerging designers must be positioned to respond in meaningful ways. This paper documents a research and design project that foregrounds several key design considerations for the future city: the expanded role of animals, the necessity for communal spaces to share knowledge, tools, and materials, and the wastespaces that can be appropriated for that purpose. In doing so, it critically considers how we can prepare future design professionals to propose architectural and landscape program types that have yet to be invented, to opportunistically graft these programs onto local underutilized sites, and to optimistically frame every project with a lens that anticipates resource scarcity.

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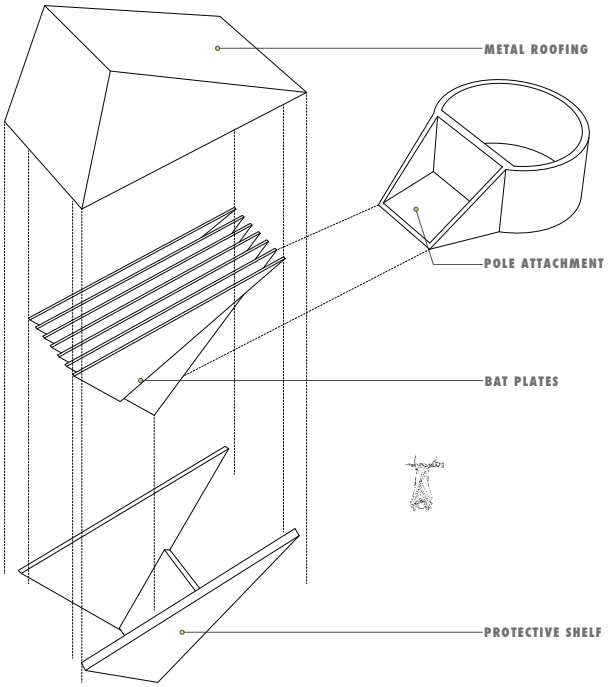
While it is difficult to forecast precisely what kinds of changes will characterize the next decade, the intertwined issues of climate change and resource scarcity promise to profoundly alter the shape and scope of urban life. In this context, urbanism may well be characterized by the need for flexible and resilient design interventions, an emphasis on productive and useful systems, and social and cultural structures that harness the potential inherent in these changes. In short, less predictable environmental conditions will necessarily demand a new form of design practice.

As climate change intensifies and resource scarcity becomes the norm, cities and towns across America will need to evolve to meet the hyper-local consumption demands of their own population centers. Self-provisioning and animal husbandry could prove to be invaluable to human survival, prompting shifts in civic and social life, land use and development trends, and economic and educational models. While food, material and fuel production has effectively become outsourced from the contemporary American city, diminishing energy reserves may eventually prompt a return to local systems.[1]

Exciting new models for self-provisioning can be deduced from the context and form of current cities and towns, rather than reverting to farming methods of the past. Such landscapes could be enlivened by the re-appropriation of leftover



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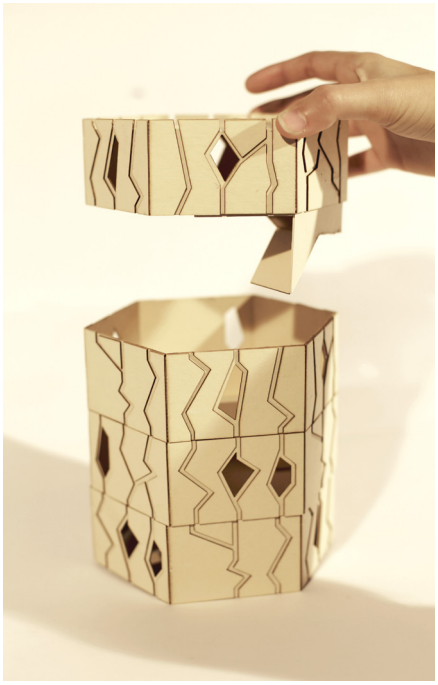

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spaces, the insertion of new programming into intact urban fabric, or the reimagining of current infrastructures to support more productive outcomes. In this way, tiny scraps of land present an opportunity to act as catalysts for change, following landscape architect Chris Reed's vision for a "new civic realm, one created by appendage and insertion."[2] Urban design interventions deployed across a city or region offer opportunities to infuse productive space into everyday landscapes.

Meanwhile, the strategic re-imagining of these waste landscapes presents cities and towns with affordable and accessible sites for development. In aggregate they provide a significant development footprint, comprised of parcels of land that might otherwise go unnoticed. Moreover, these productive zones represent new landscape typologies, in what urban theorist and professor Grahame Shane calls the "new basis of performative urbanism that emerges from the bottom up, geared to the technological and ecological realities of the postindustrial world."[3]

As the urban fabric of cities and towns change to accommodate new types of use, the design disciplines have an important role to play. Designers have the tools and expertise to help visualize new forms of development and model the impact of those design decisions. While professor Mark Wigley, calls the architect "an attractive but endangered species,"[4] he notes that to counter this diminishing disciplinary range, the next generation of designers could embrace urban activism. To expand the relevance of the design profession and to ensure that graduating designers are prepared to broaden their vision of professional engagement, curriculum will need to evolve to meet the pressing social, cultural, economic and environmental issues of our time.

STUDIO AS COLLABORATIVE THINK TANK

This paper documents an undergraduate architecture studio at UMass Amherst that foregrounds several key design considerations in this vision of the future city: the expanded role of animals, the necessity for communal spaces to share knowledge, tools, and materials, and the wastespaces that could be appropriated for this purpose. The studio curriculum prepares the next generation of design

Figure 1: Rabbit Animal Habitat by Elisabeth Baird.

Figure 2: Bat Streetlight Habitat by Alexandra Rios.

professionals to propose flexible architectural and landscape program types, to opportunistically graft these programs onto underutilized local sites, and to optimistically frame this work through a lens that anticipates improved self-sufficiency under instability.

Students worked in teams and independently to develop interrelated and iterative projects over the course of the semester.[5] Through these assignments, students developed an understanding of the types of projective design interventions that might support human and non-human life in urban areas. At the heart of this work was an intention "to renaturalize cities and invite the animals back in, and in the process re-enchant the city."[6] By using the lenses of animal architecture and productive landscapes, this studio critically considered how architectural acts---from the scale of the region to the development of the detail---play a part in creating resilient communities.

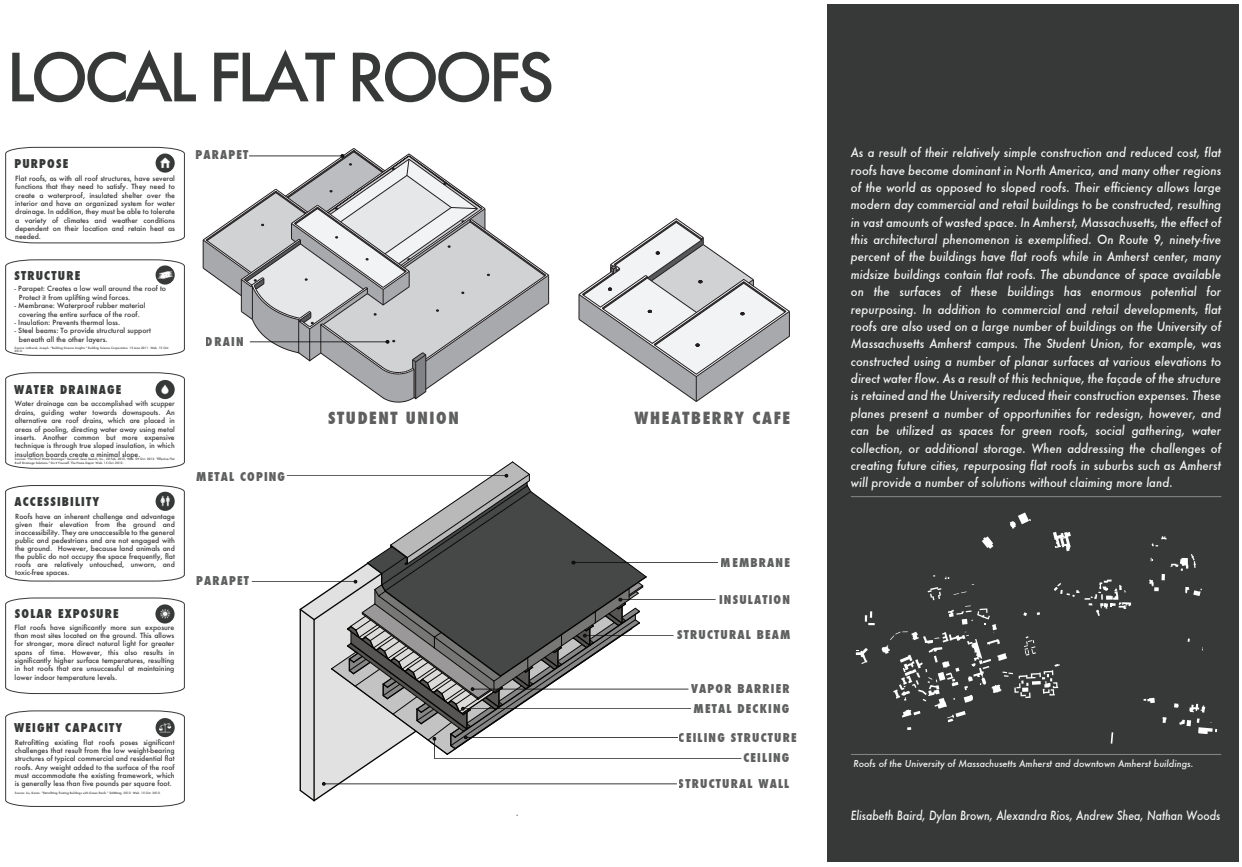
THINK TANK 01: ANIMAL DWELLING MODULE

Students began the semester with a small-scale, hands-on design project that quickly introduced them to the theoretical underpinnings of the studio: their task was to design an animal dwelling module. The animals assigned represented a diverse range of creatures selected for their productive services: providing food, clothing, fertilizer, pollination, pest control, items to trade or sell and companionship for humans. These "clients"---bats, bees, birds, chickens, ducks, guinea pigs, oysters, rabbits, silk worms and tilapia---had programmatic needs largely unfamiliar to the students.

The intention of this project was not to replicate the shelter that a client would necessarily build for themselves but, rather, to use the otherness of a different species as a prompt to critically think about dwelling. In doing so, students were required to shed preconceived notions that might accompany the design for a human client as well as to intensely investigate geometries, morphologies, materials, and methods to create a module for animal living. Freed from relying on their own lived experience and typical professional norms, the students could grapple with the notions of idealized structure, necessary utility, and the contingencies of site, territory, and available material. Importantly, students considered how a "designed" shelter might differ from one produced by the client or natural forces. At the center of this inquiry was the question: Might an intentionally designed module repair or remediate an urban condition? (Figure 1)

For example, one student produced a module for bat habitat that could be grafted onto a pervasive urban element: the freestanding street lamp. In choosing this armature as her site, the student effectively enhanced the performative qualities of the light fixture by also envisioning it as a locus for bat habitat. Another student suggested repurposing existing fire escapes to support suspended tilapia tanks as a way to introduce new protein sources to multistory urban areas. These two projects connect the need for new forms of animal habitat in the future city with the opportunities inherent in extant urban infrastructure. (Figure 2)

In considering animal husbandry through small-scale deployable design interventions, the student work addressed a larger body of contemporary practices aimed at integrating animals into human-formed landscapes. Biologists and naturalists, for instance, have collaborated with designers to develop bird-safe windows, appropriate habitat for green roofs, and dedicated animal and amphibian



underpasses within cities. Designers such as Gitta Gschwendtner have highlighted the possibility of integrating other species into the building process, as a matter of course. In *Animal Wall*, she structured over 1,000 dwellings for birds and bats into the wall of a housing project for humans.[7] Designer and blogger Ned Dodington hosts a website called *Animal Architecture*, where similar design projects from around the world make up an exhaustive repository of urban animal habitats.[8] Through the Animal Dwelling Module, students moved beyond their preconceived notions about traditional animal-human relationships to interrogate inter-species synergies that could be exploited in the future, radically reimagine even the most modest sites to be tectonically performative.

THINK TANK 02: WASTESPACE

This Think Tank research documented several of the most ubiquitous and underutilized spaces in the United States, using two historic Massachusetts towns as case studies. The first, Amherst, has an urban historic center with strong development protections and a dense, walkable urban core. Hadley, on the other hand, comprises a farm community expanding its tax base through big-box development. Together the two towns, with their divergent settlement morphologies, provide ample opportunity to document suburban and urban wastespace varieties.

Our research focused on five landscape types including *Urban Infill* sites, extensive *Flat Rooftops*, oversized *Ceremonial Front Lawns*, and the big box dross landscapes types: *Suburban Buffer Strips* and *Parking Lots*. A taxonomy of these wastespace types was developed by student teams that mapped their prevalence within the two towns, identified their common characteristics, and then projected the inherent opportunities and challenges for development on these sites.

Figure 3: Flat Roof Mapping, Amherst & Hadley, MA.

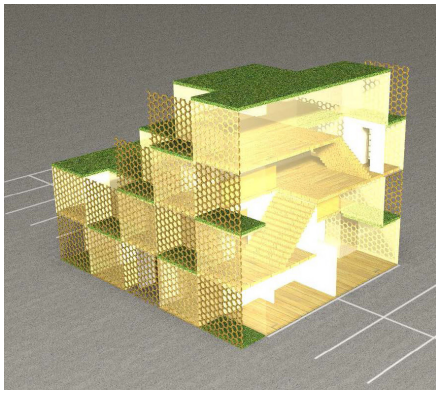


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Figure 4: Modular Apiary, Varvara Koloreva.

Research was both objective and experiential, with hours logged observing parcels and analyzing the sites' formal, ecological, social, political, cultural, material, and spatial conditions. (Figure 3)

This group research primed students to actively uncover potential development opportunities. First, it was discovered that many of these leftover spaces went virtually unnoticed by urban dwellers, suggesting they comprise an invisible asset. Second, through the effort required to gain access to assess parcels and through open GIS map analysis, students encountered the regulatory context of land ownership and development restrictions. Finally, by categorizing and mapping these spaces locally, students quickly realized the extensive footprint encompassed by these parcels. They continued their work by investigating means and methods for appropriating these parcel-types nationally and internationally.

Indeed, many of these wastespace types have historically served as fertile ground for artists, urban designers and engaged citizens. In Havana, Cuba, urban infill sites host some 7,848 *parcelas*, or vacant lot gardens;[9] and these parcels constitute a significant portion of the 86,000 acres of land currently under use for urban agriculture in Havana.[10] Flat rooftops are also put into food production in Havana, where more than a thousand small-scale livestock breeders have carved out space for rabbits, guinea pigs and chickens.[11] Cuba is just one of many countries that has embraced urban agriculture as a means of sustaining an increasingly urban population.

Unlike these urban examples, the oversized infrastructure found in suburban environments "often has considerable adjacent waste land, affording opportunities to integrate the production of food with the spaces provided for energy and transportation."[12] These drosscapes present sites for designers to engage in places where the design community has been historically absent.[13] Grassy buffer strips, for instance, have been put to use by groups such as *Help Yourself!*, the local non-profit organization which plants public-access fruit trees throughout the Pioneer Valley in western Massachusetts.[14] Meanwhile, artist Fritz Haeg popularized the redesign of the Ceremonial Front Lawn for food production with his *Edible Estates* project.[15] Finally, the transformation of asphalt parking lots into more productive use is not a new idea; a notable forerunner for this trend was the 1972 conversion of a parking lot in Berkeley, CA to the People's Park, which now hosts organic vegetable gardens.[16]

While the reimagining of unproductive urban surfaces has long been the domain of artists and guerilla gardeners, more recently this territory has gained legitimacy in design discourse. Landscape Urbanist Charles Waldheim suggests that designers could be key players in the development of productive cities, where "… architects and urbanists grapple with the implications for urban form attendant to their renewed interest in the agricultural."[17] By attempting to quantify and characterize a taxonomy of underutilized space in cities, students were able to independently formulate a compelling argument for the infusion of more productive resources within otherwise underperforming landscapes.

THINK TANK 03: THE ARK

Having developed a taxonomy of wastespaces, the studio anticipated the challenges of post-oil urban transformation through the siting of interventions to foster community knowledge sharing and re-skilling for food production and animal husbandry. These visionary projects are akin to a seedbank, a lending library, an information kiosk, a classroom, and a tool co-op – they are sites that hold the

5

"starter" materials for continued post-oil existence. Project proposals included the spatial and infrastructural needs required to house animals and their caretakers, as well as spaces to share knowledge.

These proposals provided opportunistic responses to the sites presented by urban wastespaces. For instance, a long linear median strip was reconsidered as a field for sheep grazing and wool production. While exploiting the narrow swath of grass that abuts a major roadway, this project also served to connect disparate parking lots. The student translated design language from animal crossing bridges and other highway structures, in the process referencing current thinking supporting improved landscape ecologies.[18] Another student used the uniform dimensions of the standard parking space to develop a commercial modular beekeeping pod. Sized to fit in any parking lot, the proposal hybridized commercial activity with improved biodiversity by including a café and retail outlet in a space structured by walls composed of beehive. In these two examples the students developed design responses that recognized the formal language of their urban wastespace and the creatures that would be dwelling there. (Figures 4 and 5)

MODELING FUTURE PRACTICE

Historically, critical design projects have been reserved for special topics seminars, advanced workshops or graduate work; they are intended to layer over a foundation of general architectural studies. Instead, this pedagogical research proposes introducing critical content early in the studio sequence so that it becomes a part of the students' fundamental framework for design thinking. While this approach ran the risk of eroding some of the core skills that students need to cultivate at this level, the content paired well with fundamental skills and framed early design problems within a more meaningful context. Moreover, this approach prepares students to engage in a design profession that may look radically different than the one they seek to join today. Thomas Fisher, professor and dean of the College of Design at the University of Minnesota, writes that "one of the most important transitions to be made by design schools over the next decade is to recast themselves as places where students learn to think critically as designers, while keeping the potential applications of that thinking as broad a possible."[19]

Figure 5: Sheep Farm, Dylan Brown.

ENDNOTES

1. For extended discussion, see the work of Friedman, Thomas. The World Is Flat: A Brief History of the Twenty-first Century, (London: Picador, 2005).

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Cliff Moser calls the next version of architectural practice "*Architecture 3.0*," and recognizes a "fundamental shift in the practice as a design-for-solutions professional." He clarifies that the "Arch 3.0 profession identifies design for building as a separate specialized activity (but not the core activity) that the architect may or may not choose to practice."[20] As a laboratory for conducting pedagogical research, the studio Think Tanks were developed with three goals regarding the role of pedagogy in supporting this emergent version of practice.

First, the studio structure modeled social practices deemed essential for community and professional resilience. This was achieved by cultivating a collaborative rather than a competitive environment through the implementation of skill-sharing exercises and group Research Think Tanks. In this, our work was in accord with Bruce Mau's assertion that to face contemporary challenges requires "a new species of designer" and that to approximate the "necessary depth of knowledge" requires "the collective intelligence of a team."[21]

Second, the Think Tanks modeled research as an integral part of the design process. As designers grapple with "fluid and changing conditions," project-specific research will enable them to form appropriate solutions to support each project's objectives rather than relying on programmatic generalizations or outdated knowledge. Finally, design projects anticipate that the future of both architectural practice and urbanism may rely less on traditional architectural clients and more on a "start-up" mentality predicated on "incremental, not monumental change."[22]

In his book on collapse, writer Jared Diamond notes that "The environmental problems facing us today include the same eight that undermined past societies, plus four new ones: human-caused climate change, buildup of toxic chemicals in the environment, energy shortages, and full human utilization of the Earth's photosynthetic capacity."[23] Responsible pedagogy acknowledges this context, and cultivates beginning designers' capacity to respond optimistically and opportunistically. By looking at contemporary design responses, both internationally and hyper-locally, the next generation of designer will be able to anticipate new programs and to design interventions that insert productive space into everyday landscapes.

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